

Appl. No. 10/801,818
Amdt. dated October 12, 2005
Reply to Office Action of August 11, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method of modifying a surface of a casting, comprising:

- (a) providing a casting mould;
- (b) placing a perforated mask having a plurality of perforations with the mould to define a masked area of the mould;
- (c) spray-coating the masked area of the mould with a coating material to produce a coating layer on the mould that is divided into fragments as a result of spraying the coating material through the mask, the coating material selected for forming a surface layer on the casting;
- (d) introducing a liquid casting material to the mould; and,
- (e) solidifying the liquid casting material to form a surface modified casting.

Claim 2 (original): The method according to claim 1, wherein the casting mould is pre-treated to strengthen the mould.

Claim 3 (original): The method according to claim 1, wherein the perforated mask is placed with the mould to provide a gap between the mask and the mould of about 1 mm to about 15 mm throughout the masked area.

Claim 4 (original): The method according to claim 1, wherein the perforated mask comprises a metal, a metal-coated plastic, a ceramic, or carbon.

Claim 5 (original): The method according to claim 1, wherein the perforated mask has a regular pattern of perforations and 2 to 20 openings per 2.5 cm, and wherein the perforations have a regular shape and a shortest axis measuring about 0.5 mm to about 20 mm.

Claim 6 (original): The method according to claim 5, wherein the mask is a mesh.

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Claim 7 (original): The method according to claim 1, further comprising applying an overlay of coating material to the mould without the perforated mask before introducing the liquid casting material to the mould.

Claim 8 (original): The method according to claim 1, wherein the spray-coating comprises subsequent passes and a different coating material is applied in one or more of the subsequent passes.

Claim 9 (original): The method according to claim 1, wherein the perforated mask is left with the mould when the liquid casting material is introduced to the mould to thereby form a surface layer incorporating the mask.

Claim 10 (original): The method according to claim 1, wherein the casting material is a metal.

Claim 11 (currently amended): A method of ~~modifying a surface of a metal casting, comprising:~~

- (a) providing a ceramic, sand or metallic casting mould;
- (b) placing a perforated mask having a plurality of perforations with the mould to define a masked area of the mould;
- (c) thermal spray-coating the masked area of the mould with a coating material to produce a coating layer on the mould that is divided into fragments as a result of spraying the coating material through the mask, the coating material selected for forming a surface layer on the metal casting;
- (d) introducing a molten metal to the mould; and,
- (e) solidifying the molten metal to form a surface modified metal casting.

Claim 12 (original): The method according to claim 11, wherein the casting mould is a ceramic casting mould.

Claim 13 (original): The method according to claim 11, wherein the casting mould is pre-treated to strengthen the mould.

Claim 14 (original): The method according to claim 11, wherein the coating material comprises an Fe-based alloy, a Ni-based alloy, a Co-based alloy, an oxide, a nitride, a boride, a carbide, a mixture of ceramic with a metal, a mixture of cermet with a metal, or a mixture thereof.

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Claim 15 (original): The method according to claim 11, wherein the perforated mask comprises a metal, a metal-coated plastic, a ceramic, or carbon.

Claim 16 (original): The method according to claim 11, wherein the perforated mask comprises a mesh or a perforated plate.

Claim 17 (original): The method according to claim 11, wherein the perforated mask is placed with the mould to provide a gap between the mask and the mould of about 1 mm to about 15 mm throughout the masked area.

Claim 18 (original): The method according to claim 11, wherein the perforated mask has a regular pattern of perforations and 2 to 20 openings per 2.5 cm, and wherein the perforations have a regular shape and a shortest axis measuring about 0.5 mm to about 20 mm.

Claim 19 (original): The method according to claim 18, wherein the perforated mask is a steel mesh.

Claim 20 (original): The method according to claim 11, further comprising applying an overlay of coating material to the mould without the perforated mask before introducing the molten metal to the mould.

Claim 21 (original): The method according to claim 11, wherein the molten metal is an Fe-based alloy.

Claim 22 (original): The method according to claim 11, wherein the molten metal is a steel or cast iron.

Claim 23 (original): The method according to claim 11, wherein the thermal spray-coating comprises subsequent passes and a different coating material is applied in one or more of the subsequent passes.

Claim 24 (original): The method according to claim 11, wherein the perforated mask is left with the mould when the molten metal is introduced to the mould to thereby form a surface layer incorporating the mask.